



# WBS 1.1 Technical Components

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- **Technical Components readiness for installation**

★ = Needed for 2004 Shutdown



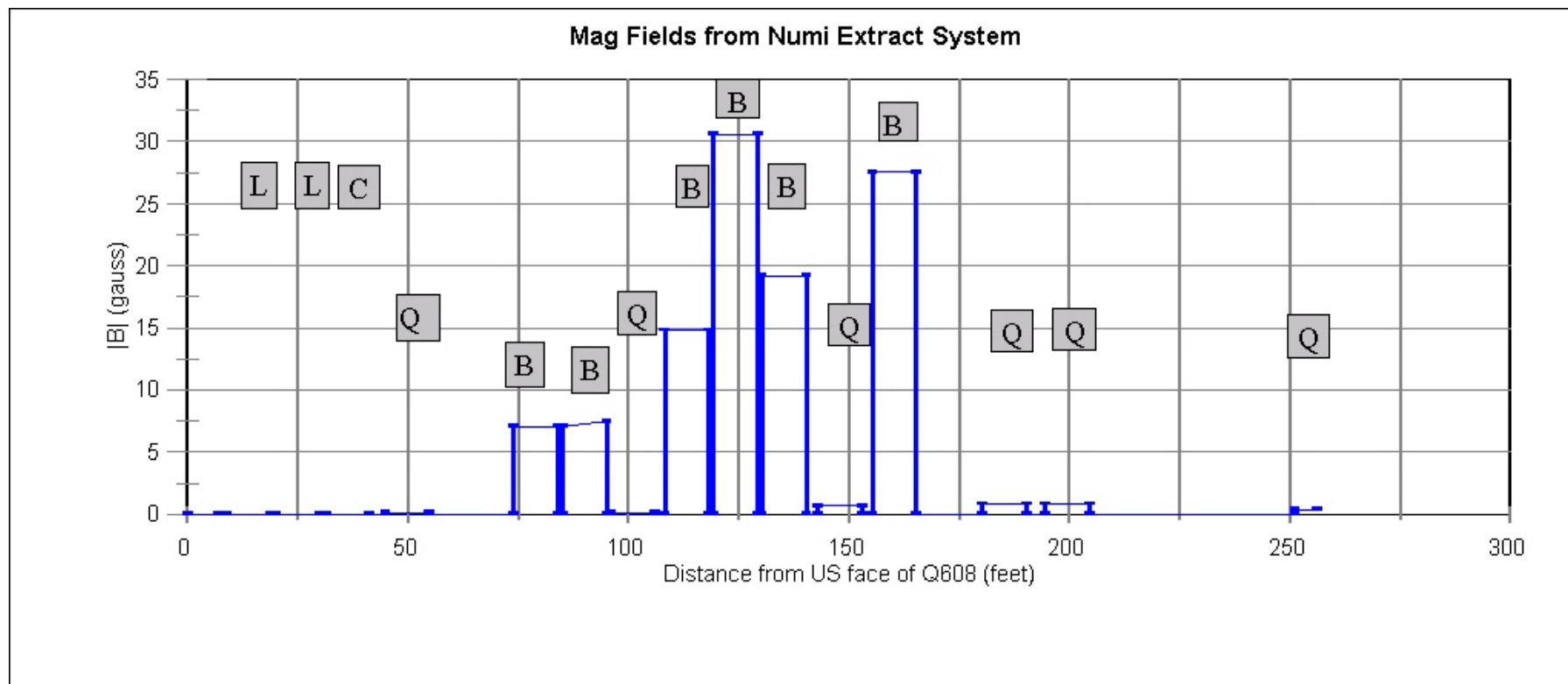
## WBS 1.1.1 Primary Beam Extraction & Transport

- Lambertson & C-magnet installed in Main Injector
- Kicker magnets assembled
- All major magnets installed & rough aligned 9/13
- Recycler shielding prototyping (NuMI, Recycler & Accelerator Integration Dept's) is underway at TD
  - « Need to shield 6 EPB's to achieve ~1 Gauss external to Recycler
  - « First 2 EPB shields can be installed & tested in March in MI
    - \* Needed before August shutdown
- Need to ramp 3Q quadrupole magnets – inadequate water cooling
  - « Chill plates needed on ~6 magnets. TD designed
- Corrector magnets are ready for installation
- Corrector & instrumentation stand design in progress





# Recycler Shielding



L = Lambertson

C = C-Magnet

Q = Quadrupole magnet

B = Dipole magnet



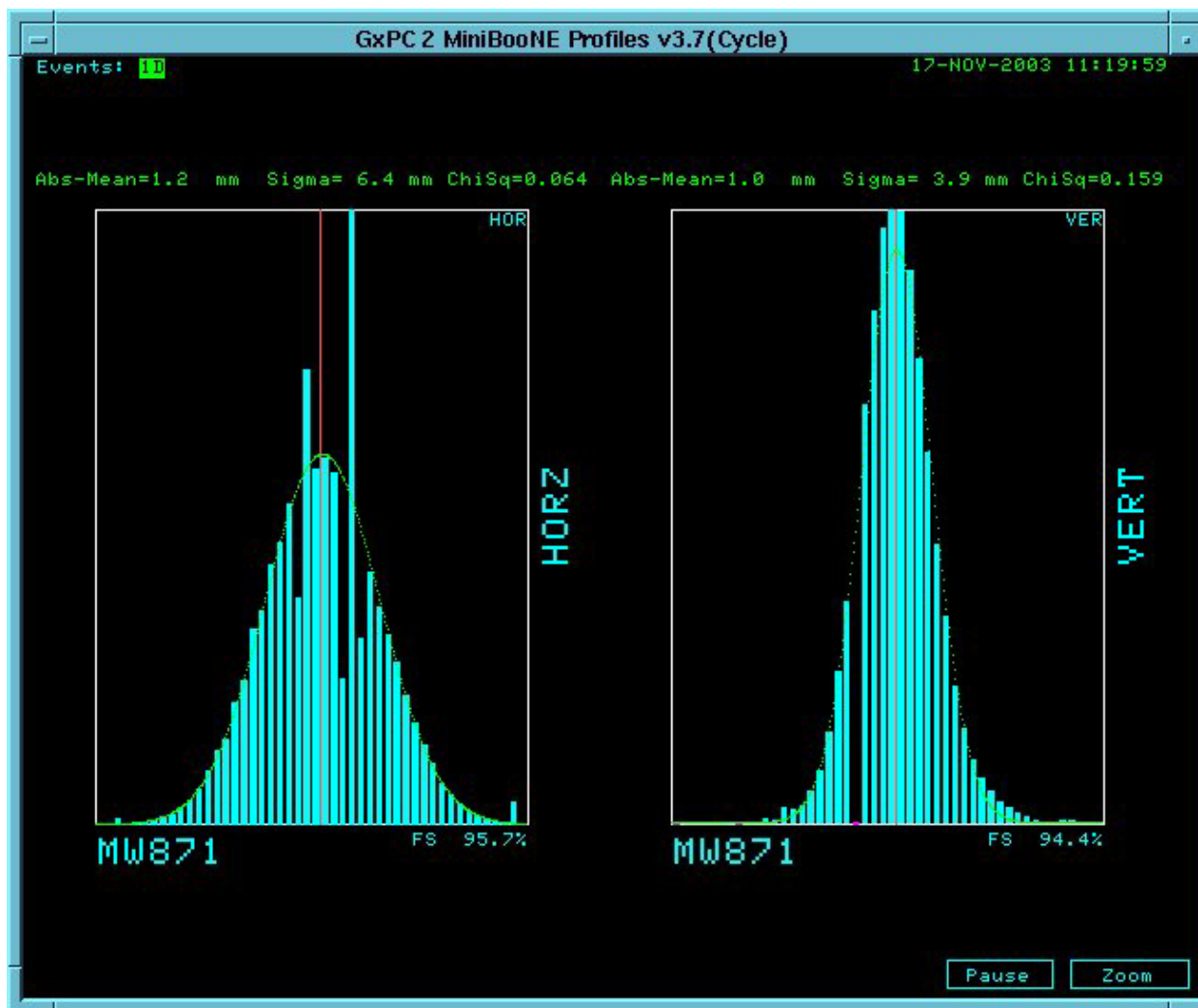
## WBS 1.1.1 Primary Beam Extraction & Transport - Instrumentation

- Debbie Harris appointed Instrumentation Coordinator
- Instrumentation Review held Oct 24
- Beam Position Monitors (11 Vert + 13 Hor)
  - « Physical devices and readout A/D converter exist on-site
  - « Signal conditioning electronics prototyping in progress
  - « Checkout electronics in tunnel in late June
- Beam Profile Monitors (10)
  - « Prototype monitor tested in MiniBooNE beamline (next slide)
  - « First production Ti foil monitor meets vacuum and stability requirements
  - « UT-Austin will deliver 1 monitor in March, 4 monitors by July 1 and balance by September 1
  - « Instrumentation Dept building 6 multi-wires as a backup
- Total Loss Monitors (4)
  - « Heliax installed
  - « Radioactive source heart-beat tested at RTF








# UT Profile Monitor Prototype MiniBooNE Test





# WBS 1.1.1 Primary Beam Extraction & Transport – Instrumentation & Controls

- Beam Loss Monitors (45 + 8 MI + 7 hot spares) 
  - « All tubes on-site
  - « Assembly and calibration on-going
- Toroids (2) 
  - « Toroids on-site
  - « Standard electronics
- Loss Monitor Calibration target (1) 
  - « Use modified multi-wire housing to provide 1 calibrated loss/device
- Controls
  - « Parameter page development on-going
  - « Beam Loss Budget Monitor & Beam Budget Monitor not started yet
    - \* Several man-wks of effort to duplicate existing systems
  - « Auto-tune application in progress – P. Lucas, J. DeVoy



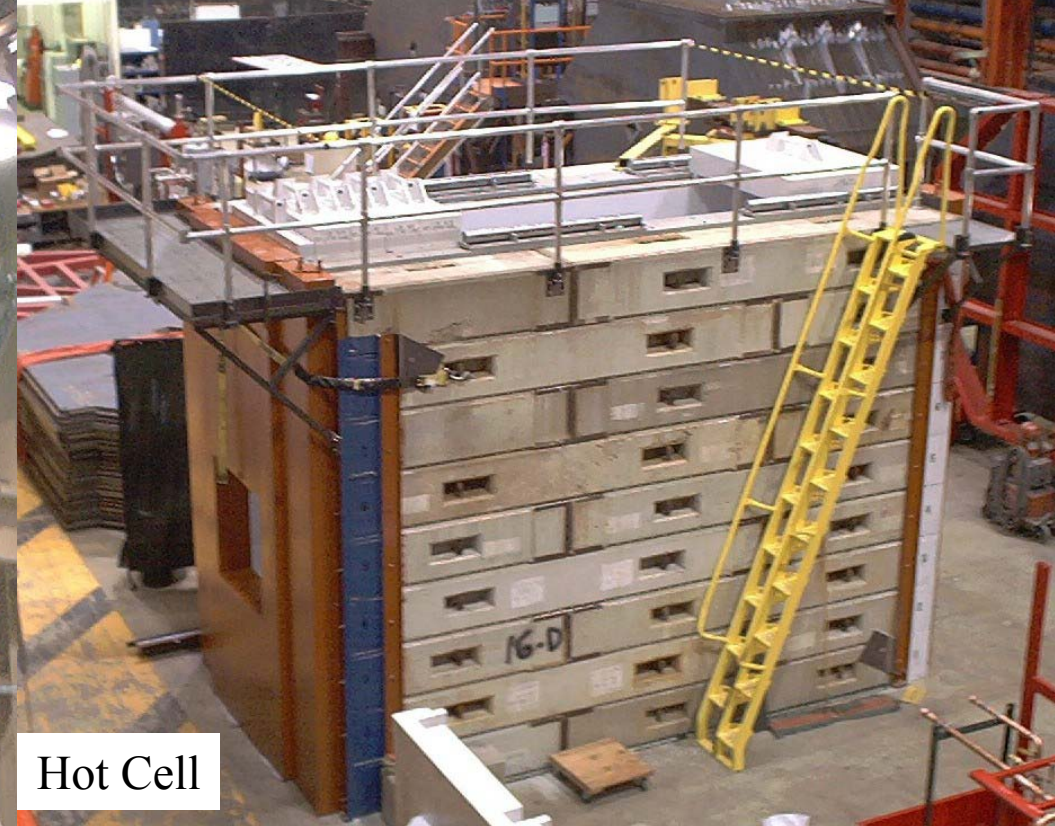
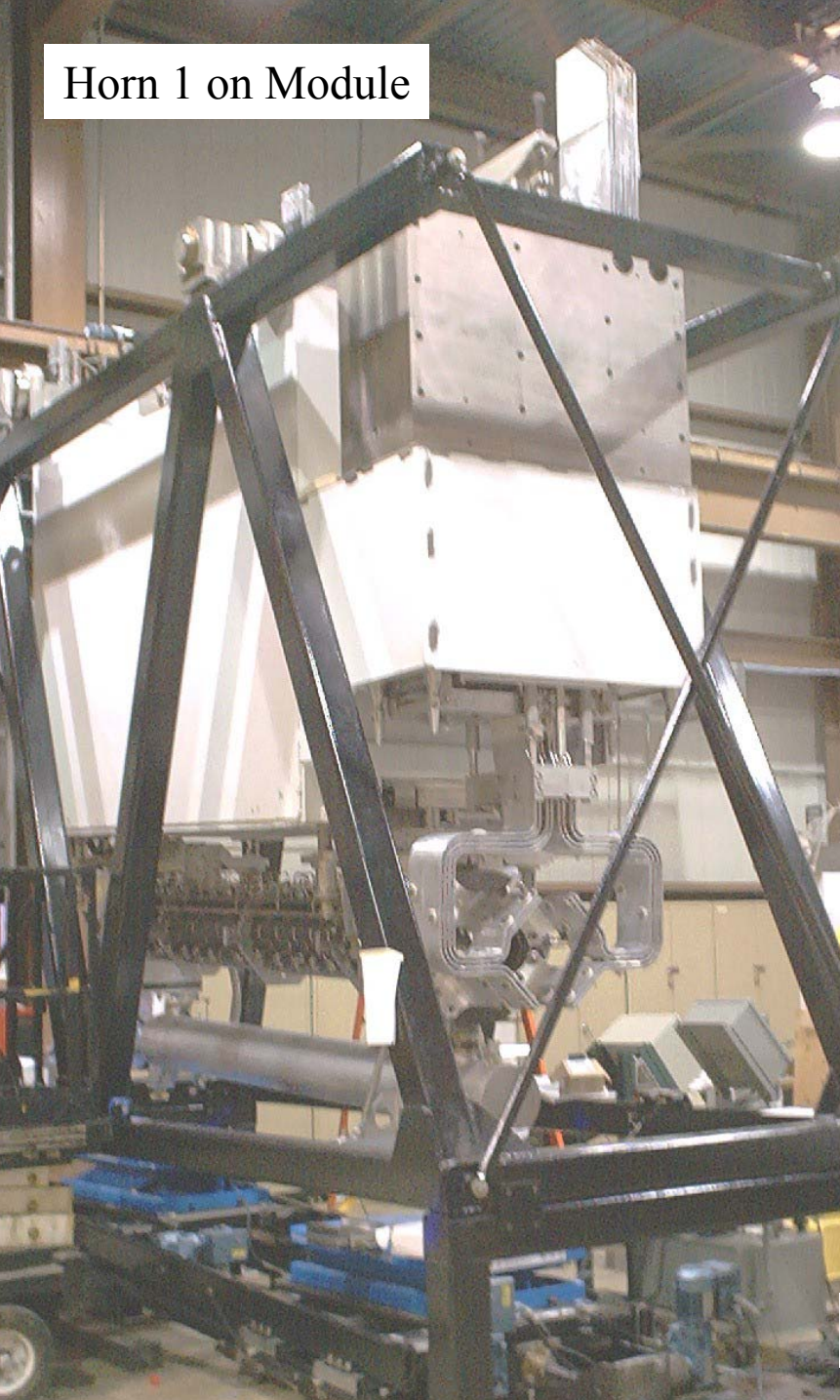
# WBS 1.1.2 Neutrino Beam Devices

Director's Review  
2/12/04  
WBS 1.1 - 7 BRB

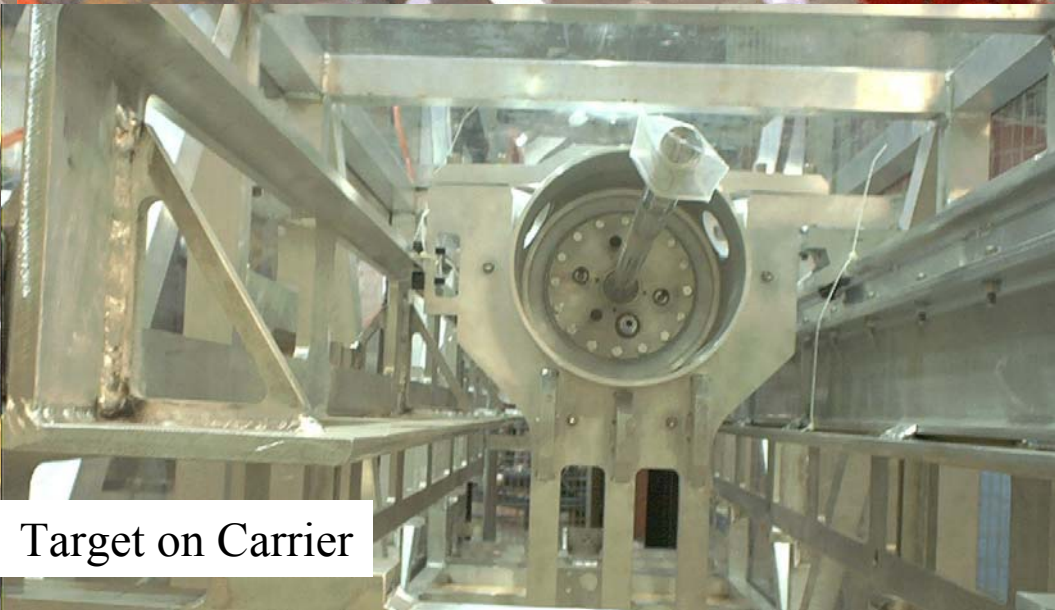
- Neutrino horns assembled and tested
- Horn 1 is mounted on horn 1 module
  - « L3 milestone complete this month when final utility connections made
- Horn 2 will be mounted on it's module in March
- Target/Baffle test fitted on carrier frame
  - « Carrier rails are out for coating
- Target/Baffle module assembled end of February
  - « Carrier frame mounted on module in May
- All target pit shield blocks are on-site
- Hot Cell shielding pre-assembled at New Muon Lab
- Hot Cell lift table in use at MI-8
- Air cooling system out for procurement next month



Horn 1 on Module



Hot Cell



Target on Carrier





# WBS 1.1.3 – Power Supply Systems

- Refurbishment of power supplies is on-going
- Horn power supply installation planned in mid March
  - « DOE milestone L-2-17
- Kicker power supply construction on-going
  - « Some vendor fabricated components needed re-work
  - « Minor design change to load resistor to improve cooling
  - « Fluorinert temperature/flow control work needed if cycle time is not stable
  - « Power supply and load ready for testing in April
- Horn stripline components are all out for fabrication
  - « March delivery
  - « Stripline assembly & installation fixture design in progress

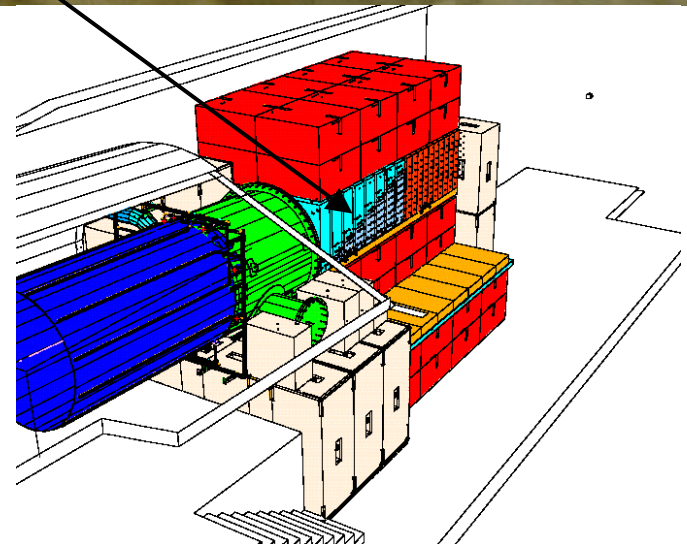




# WBS 1.1.4 – Hadron Decay and Absorber

Director's Review  
2/12/04  
WBS 1.1 - 10 BRB

- Upstream decay pipe end cap installed
- Downstream end cap ready for installation
- Absorber core modules exist on-site
- Steel core modules ready for installation
- All concrete shield blocks identified
- Labyrinth design reviewed by ES&H
  - « Details of hand-stack shielding for utilities penetrations in design

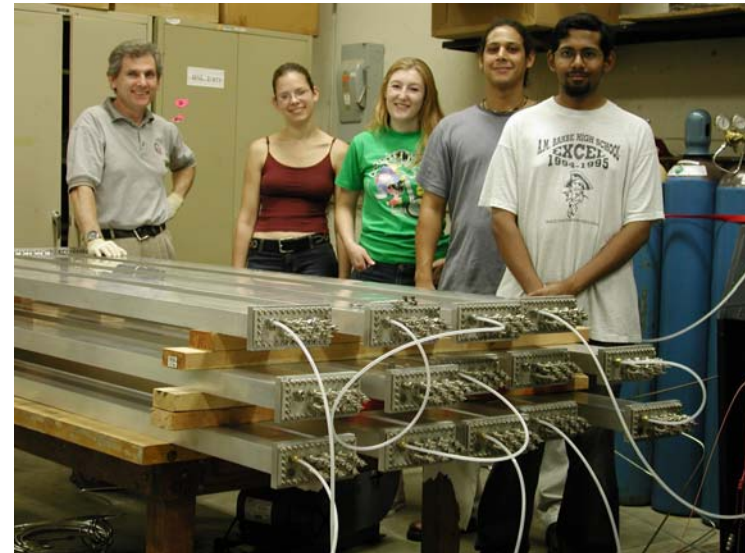
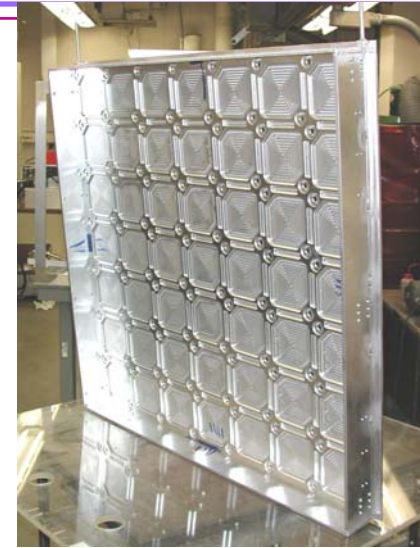




# WBS 1.1.5 – Neutrino Beam Monitoring

Director's Review  
2/12/04  
WBS 1.1 - 11 BRB

- Several weeks of assembly to finish the Hadron Monitor
- All Muon Monitor tubes tested and calibrated at UT-Austin
- Monitors are ionization chambers - ceramic pad design w helium gas
- Support frame constructed at UW – Madison





## WBS 1.1.7 – Utilities

### WBS 1.1.8 – Cables Controls & Intlks

- All LCW header lines installed & tested
  - « Need to add a few taps in carrier tunnel
- All RAW skids assembled at New Muon Lab
  - « Electrical wiring in progress
- Beam vacuum system procurement on-going
  - « Ion pumps on-site
- FIRUS & telephone installed at MI-65 & MINOS SB
- Installing controls racks at MI-65 & MINOS SB
- Target hall shield door support frame in fabrication



# Summary

- Design is ~100% complete
  - « Instrumentation & corrector stands are straightforward
  - « BPM signal conditioning electronics ~straightforward
    - \* Really needed in December
- Long lead time & “risky” items are here or have large float
  - « Delivery of 5 profile monitors have 2+ months of float to Aug 23 Shutdown